

WHAT IS CLAIMED IS:

1. A weight measurement apparatus comprising:

a signal processor for carrying out a filtering process on a weighing signal
5 which is obtained by digitizing a signal resulted from detection of a weight of an object,
by using variable filter coefficients; and

a filter coefficient calculator for calculating said filter coefficients using a
predetermined arithmetic expression and outputting said filter coefficients to said signal
processor, wherein

10 said arithmetic expression includes a parameter specifying a band position of an
attenuation band where attenuation is to be enhanced locally in a stopband of amplitude
characteristics of said filtering process, and

said filter coefficient calculator substitutes an input value of said parameter into
said arithmetic expression, to change said filter coefficients so that said attenuation band
15 is movable to said band position specified by said parameter.

2. The weight measurement apparatus according to claim 1, wherein

said arithmetic expression is an approximate expression based on at least three
sequences of reference filter coefficients,

20 said at least three sequences of said reference filter coefficients correspond to
reference amplitude characteristics of said filtering process in three or more reference
band positions, respectively, and

said band position of said attenuation band is specifiable by said parameter
within a frequency range from the lowest one out of said three or more reference band
25 positions to the highest one out of said three or more reference band positions.

3. The weight measurement apparatus according to claim 1, further comprising

5 a data entry part for receiving said value of said parameter which is input externally to said weight measurement apparatus and outputting said value of said parameter to said filter coefficient calculator.

4. The weight measurement apparatus according to claim 1, wherein
10 said arithmetic expression is expressed by a polynomial with a plurality of terms for said parameter.

5. The weight measurement apparatus according to claim 1, wherein
15 said signal processor carries out said filtering process by using a finite impulse response (FIR) digital filter.

6. A method of eliminating a noise employed in a weight measurement apparatus, comprising the steps of:

(a) calculating filter coefficients using a predetermined arithmetic expression:
and

20 (b) carrying out a filtering process on a weighing signal which is obtained by digitizing a signal resulted from detection of a weight of an object, using said filter coefficients calculated in said step (a), wherein

said arithmetic expression includes a parameter specifying a band position of an attenuation band where attenuation is to be enhanced locally in a stopband of amplitude
25 characteristics of said filtering process,

said step (a) includes the step of (a-1) substituting a value of said parameter into said arithmetic expression, to change said filter coefficients, and

said attenuation band is moved to said band position specified by said parameter by performing said step (a-1).

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7. The method of eliminating a noise according to claim 6, wherein

said arithmetic expression is an approximate expression based on at least three sequences of reference filter coefficients,

said at least three sequences of said reference filter coefficients correspond to
10 reference amplitude characteristics of said filtering process in three or more reference band positions, respectively, and

said band position of said attenuation band is specifiable by said parameter within a frequency range from the lowest one out of said at least three reference band positions to the highest one out of said at least three reference band positions.

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8. The method of eliminating a noise according to claim 6, further comprising the step of

(c) receiving said value of said parameter which is input externally to said weight measurement apparatus, wherein

20 said value of said parameter received in said step (c) is substituted into said arithmetic expression in said step (a-1).

9. A method of designing a digital filter in which a band position of an attenuation band where attenuation is to be enhanced locally in a stopband of amplitude
25 characteristics is variable, said method comprising the steps of:

(a) calculating a plurality of sequences of reference filter coefficients based on reference amplitude characteristics of said digital filter;

(b) approximating filter coefficients of said digital filter using a predetermined arithmetic expression including a parameter specifying said band position of said attenuation band, based on said plurality of sequences of said reference filter coefficients;
5 and

(c) calculating said filter coefficients using said predetermined arithmetic expression, wherein

said step (c) includes the step of (c-1) substituting a value of said parameter into
10 said predetermined arithmetic expression, to change said filter coefficients, and

said attenuation band is moved to said band position specified by said parameter by performing said step (c-1).